

p. 337) agree completely with the specimen now figured (Plate I. fig. 2), which was formerly in my collection. If, therefore, I am correct in referring the last-named specimens to the female of *C. sandwichensis*, then *C. sclateri* = *C. sandwichensis* ♀. And should it prove eventually that these two forms are not male and female, but belong to two different species, a view which receives some support from the fact that the two 'Challenger' skins are marked as "female" by the collector (though I am strongly of opinion that this was an erroneous determination), yet even then the name "*sclateri*" will apparently have to yield to *maculata*, Gm.—the *Muscicapa maculata* of Gmelin having been, as it would seem, based on a female of this species.

It should be acknowledged that Mr. Ridgway appears in this case to have been rather misled by Mr. Sharpe, who in the 'British Museum Catalogue,' iv. p. 232, has omitted any description of the female of *Chasiempis sandwichensis*, although the only specimen then belonging to the Museum was of that sex, and has only given a description of the male from the 'Challenger' expedition. It is true that both sexes are introduced into the diagnoses (p. 231); but the characters set forth seem to be intended to separate the two sexes of *Ch. sandwichensis* from the corresponding sexes of *Ch. dimidiata*, and are not sufficient to separate the two sexes of *Ch. sandwichensis* from one another.

III.—On the Aftershaft in the Feathers of certain Birds.

By F. E. BEDDARD, M.A., F.Z.S., Prosector to the Zoological Society of London.

My attention has been directed to a recent number of the 'Actes de la Société Linnéenne de Bordeaux,' which contains part of a memoir by Dr. A. T. de Rochebrune upon the fauna of Senegambia*.

The paper in question deals with the birds of this region;

* "Faune de la Sénégambie, Oiseaux," par le Dr. A. T. de Rochebrune, Actes d. la Soc. Linn. de Bordeaux, sér. 4, t. viii. March 1884, p. 85.

it is prefaced with some general considerations, in which the author brings forward a great number of facts relating to the presence or absence of the structure known as the aftershaft in the bird's feather, and in many cases contradicts the statements made by Nitzsch in his classical work upon Pterylography *.

Thus, with respect to the Swifts, in which birds the feathers are stated by Nitzsch to be furnished with an aftershaft, Dr. Rochebrune remarks:—"Malgré nos recherches les plus minutieuses, aucune espèce des genres *Cypselus*, *Chætura* &c., ne nous a fourni de plume adventice, et nous affirmons que toutes indistinctement en sont dépourvues."

I have examined one species of each of these genera, viz. *Chætura zonaris* and *Cypselus apus*, and find that a distinct aftershaft is present in both of them. The accompanying



Pectoral feather of *Chætura zonaris*, from behind,
to show the aftershaft.

woodcut is a copy of one of the pectoral feathers of the former species; the aftershaft is here large and well developed, attaining to rather more than half the length of the feather itself.

In *Cypselus apus* the aftershaft is entirely similar.

In other cases it is rather difficult to follow Dr. Rochebrune's criticisms, and the discrepancies between his statements and those of Nitzsch seem often to be due to a different conception of what an aftershaft is. Nitzsch defines it as follows (*op. cit.* p. 89):—"The aftershaft originates from the underside of the feather beneath the umbiliciform pit; it resembles the main shaft, and, like it, emits two series of barbs, thus forming along with the shaft an apparently

* 'Pterylography,' English edition (London, 1867).

double feather There are, however, a great many birds in which it is deficient, and in its place a few isolated barbs occur."

Dr. Rochebrune, on the contrary, states of the aftershaft :—
 "La plume adventice, variable dans ses formes, ses dimensions, sa composition, n'est pas toujours unique ; très souvent on en rencontre deux ou un plus grand nombre, distinctes, indépendantes les unes des autres, quoique en connexion par leur insertion sur la tige de la plume principale. Ce mode d'insertion n'est pas non plus invariablement fixe ; on voit ces plumes adhérer tantôt directement à la face inférieure de la tige principale, tantôt en côté, soit au niveau de la cavité ombilicale citée par Nitzsch, soit en-dessus ou en-dessous, être sessiles ou pédicellées, posées en couronne etc., enfin dans aucun cas et sous aucun rapport, elles ne ressemblent à la plume principale."

The main difference therefore between the two definitions appears to be that the aftershaft, according to Dr. Rochebrune, is not always single, but that there are frequently several distinct and separate aftershafts present on the same feather. This may be true ; but the facts brought forward by Dr. Rochebrune, so far as I have been able to verify them by comparison with the feathers themselves and even with his own figures, do not appear to confirm this statement. To take an instance ; the aftershaft of *Numida* is described by Dr. Rochebrune in the following words :—"On trouve cinq plumes adventices distinctes, d'inégale longueur, sessiles sur la tige principale et à insertion commune ; leurs barbules sont assez fortes, courtes et médiocrement rigides." A figure (*op. cit.* pl. iii. fig. 1) is given of one of the feathers of this bird, which is a sufficiently accurate representation of the original. The aftershaft consists of a short stem bearing on either side two or three barbs, *each of which* Dr. Rochebrune, if I understand him rightly, considers to be the equivalent of a single aftershaft, such as that which is stated to be found in *Perdix*. It does not appear to me, however, that this comparison is at all justifiable ; the barbs of the aftershafts are entirely similar to those which spring from the lower portion of the

main stem of the feather; the structure as a whole only differs from that of *Perdix* in being comparatively smaller and bearing fewer barbs; I do not at all follow Dr. Rochebrune's distinction between the two families. If the after-shaft be "single" in *Perdix* it certainly is so also in *Numida*.

In the feathers of *Cathartes* Dr. Rochebrune states the presence of a large aftershaft, while Nitzsch distinguishes this genus and *Pandion* from the rest of the Accipitrinæ Diurnæ by the absence of the same structure. In these two genera, however, as well as in the Owls, the aftershaft is not entirely unrepresented, but, as Nitzsch correctly says, its place is occupied by a tuft of isolated barbs; it is easy to separate the individual barbs by means of a needle, and to assure one's self that each springs *separately* from the main stem of the feather; the structure therefore does not fall within Nitzsch's definition of an aftershaft. This difference, which Nitzsch has pointed out between the Accipitrinæ Nocturnæ on the one hand and the Accipitrinæ Diurnæ, with the exception of the two genera *Cathartes* and *Pandion*, on the other, is perfectly plain. Dr. Rochebrune's definition of an aftershaft, however, does include this tuft of barbs; the aftershaft, according to him, is occasionally 'sessile' upon the feathershaft, and is not always borne upon a secondary shaft; the feathers of *Cathartes* and *Bubo maculosus* are furnished with an aftershaft of this kind, which is no doubt the equivalent of the 'true' aftershaft of the Accipitrinæ Diurnæ. Dr. Rochebrune is perhaps, strictly speaking, right in saying that the Accipitrinæ Nocturnæ are not devoid of an aftershaft; but he seems to have overlooked that Nitzsch himself had previously noticed this same structure, which he describes as occurring in the place of the aftershaft. Dr. Rochebrune has therefore not pointed out a new fact, but has merely recapitulated what Nitzsch said many years previously, failing, however, to emphasize the essential difference between the 'true' aftershaft of the Accipitrinæ Diurnæ and the tuft of isolated barbs which characterize the feathers of *Cathartes* and the Accipitrinæ Nocturnæ.

In the Parrots, according to Nitzsch, the contour-feathers have a large and distinct aftershaft *; Dr. Rochebrune does not dispute the accuracy of the fact, but makes Nitzsch responsible for having said exactly the reverse:—"Pour Nitzsch une plume adventice† large et distincte est probablement moins fréquente chez les Perroquets que chez les autres oiseaux." The quotation is correct, but the omission of a few words at the beginning destroys the true sense of the passage, which in the English translation runs as follows ‡:—"Contour-feathers with a large and distinct aftershaft, very sparsely distributed, probably present in smaller comparative number than in any other birds."

Dr. Rochebrune compares the aftershaft in the three genera *Pæocephalus*, *Psittacus*, and *Palæornis* to that of the Accipitrinæ Nocturnæ, a comparison which does not hold good. In the feathers of these as of all other Parrots which I have had the opportunity of examining, the aftershaft resembles entirely another smaller feather attached to the base of the stem, and is not at all like that of the Accipitrinæ Nocturnæ; in these birds, as already said, there is merely a tuft of barbs occupying the same position, and no doubt corresponding to an aftershaft, but quite different in structure.

Dr. Rochebrune concludes his remarks upon the aftershaft by recapitulating the chief results to which he has been led, viz. that this structure is not absent in the Accipitrinæ Nocturnæ, as stated by Nitzsch, but is absent in the Cypselidæ, where Nitzsch describes its presence. The last conclusion of Dr. Rochebrune has been shown in the present note to be manifestly incorrect; with regard to the former, the tuft of barbs which represents the shaft in the Accipitrinæ Nocturnæ is, as Nitzsch has pointed out, quite different from the true aftershaft of the Accipitrinæ Diurnæ; to confound them, as Dr. Rochebrune has done, is to render useless a very convenient distinction between the two groups.

* *Op. cit.* p. 95.

† *Op. cit.* p. 99.

‡ *Ibid.*